

Claims

[c1] What is claimed is:

1.A method for calculating attributes of vertexes of a three-dimensional pattern having a plurality of triangular primitives with a vertex shader, each of the triangular primitives having three vertexes, each of the vertexes comprising a plurality of attributes, and the method comprising:

calculating a triangular transform and related position attributes corresponding to a triangular primitive with a transform program consisting of a couple of instructions among a plurality of instructions of the vertex shader; determining whether the triangular transform is visible according to the position attributes of the triangular transform; and

calculating remaining attributes of the triangular transform if the triangular transform is visible or not calculating the remaining attributes of the triangular transform and culling the triangular transform if the triangular transform is invisible.

[c2] 2.The method of claim 1, wherein whether the triangular transform is visible is determined by determining

whether a discriminant

$$\begin{bmatrix} x_1 - x_0 & x_2 - x_0 \\ y_1 - y_0 & y_2 - y_0 \end{bmatrix}$$

is positive, x_0 , x_1 and x_2 being x-coordinates of the position attributes of the three vertexes of the triangular transform respectively, and y_0 , y_1 and y_2 being y-coordinates of the position attributes of the three vertexes of the triangular transform respectively.

[c3] 3.The method of claim 1, wherein whether the triangular transform is visible is determined by determining whether a normal vector of the triangular transform is pointing outward.

[c4] 4.The method of claim 1, wherein the remaining attributes of the triangular transform are calculated with a lighting program.

[c5] 5.The method of claim 4, wherein the triangular transform has three vertexes, each of the three vertexes comprising at least a color attribute, and the light program is used for calculating the color attributes.

[c6] 6.The method of claim 5, wherein each of the vertexes

comprises four color attributes.

- [c7] 7.The method of claim 6, wherein the four color attributes are red, green, blue, and alpha attributes respectively.
- [c8] 8.The method of claim 4, wherein the triangular transform has three vertexes, each of the vertexes comprising four texture attributes, and the lighting program is used for calculating the texture attributes.
- [c9] 9.The method of claim 1, wherein each of the vertexes comprises 16 attributes.
- [c10] 10.The method of claim 1, wherein each of the attributes of the vertexes has a data capacity of 4x32 bits.